Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

TITLE V RENEWAL DRAFT PERMIT NO. V-05-077
BPB MANUFACTURING, INC.
CARROLLTON, KY
May 24, 2006
RALPH GOSNEY, P.E., REVIEWER

SOURCE I.D. #:	21-041-00040
SOURCE A.I. #:	698
ACTIVITY #:	APE20040001

SOURCE DESCRIPTION:

BPB Manufacturing, Inc. operates a synthetic gypsum wallboard forming facility in Carrollton, Kentucky (Kentucky Plant I. D. Number 021-041-00040). The facility, which commenced operation in September 2000, produces wallboard from synthetic gypsum (calcium sulfate dihydrate [$CaSO_4 \cdot 2H_2O$]). Wet gypsum is a beneficial by-product of flue-gas desulfurization systems. The Carrollton facility receives wet gypsum as a raw material. The wet gypsum is first dried in a dryer and then sent to a kettle calciner. The resulting stucco is then mixed with various additives and foaming agents to form a paste. This paste is sandwiched between paper coating and the mixture is "dried" to remove excess water and to recrystallize into gypsum. The boards are then trimmed, marked and stacked.

The source consists of the following significant emission units:

(a) One (1) waste gypsum board reclaimer, identified as EP A and constructed in 2000, with a maximum capacity of 6.05 tons dried ground gypsum per hour and a rated burner capacity of 8 mmBTU/hr fired with natural gas fuel, using a baghouse for particulate matter control and exhausting to one (1) stack EP A;

(b) One (1) FGD drying system #1, identified as EP B and constructed in 2000, with a maximum capacity of 44.6 tons dried gypsum per hour and a rated burner capacity of 23.7 mmBTU/hr fired with natural gas fuel, using a baghouse for particulate matter control and exhausting to one (1) stack EP B;

(c) One (1) FGD drying system #2, identified as EP C and constructed in 2000, with a maximum capacity of 46.8 tons dried gypsum per hour and a rated burner capacity of 23.7 mmBTU/hr fired with natural gas fuel, using a baghouse for particulate matter control and exhausting to one (1) stack EP C;

(d) One (1) calcining kettle #1, identified as EP E and constructed in 2000, with a maximum capacity of 38.4 tons stucco per hour, using baghouse for particulate matter control and exhausting to one (1) stack EP E. Kettle #1 operates a 40 mmBTU/hr burner, fired with natural gas fuel, to indirectly heat and calcine the landplaster into stucco. Kettle #1 Burner exhausts to one (1) dedicated burner stack EP D;

(e) One (1) calcining kettle #2, identified as EP F and constructed in 2000, with a maximum capacity of 40.9 tons stucco per hour, using baghouse as particulate matter control and exhausting to one (1) stack EP F. Kettle #2 operates a 40 mmBTU/hr burner, fired with natural gas fuel, to indirectly heat and calcine the landplaster into stucco. Kettle #2 Burner exhausts to one (1) dedicated burner stack EP G;

(f) One (1) fluid bed stucco cooler, identified as EP H and constructed in 2000, with a maximum capacity of 80.0 tons stucco per hour, using baghouse for particulate matter control and exhausting to one (1) stack EP H.

(g) One (1) vermiculite bin, identified as EP I and constructed in 2000, with a maximum capacity of 5.0 tons vermiculite per hour, using filters for particulate matter control and exhausting to one (1) stack EP I;

(h) One (1) clay bin, identified as EP J and constructed in 2000, with a maximum capacity of 2.8 tons clay per hour, using filters for particulate matter control and exhausting to one (1) stack EP J;

(i) One (1) starch silo, identified as EP K and constructed in 2000, with a maximum capacity of 0.72 tons starch per hour, using filters for particulate matter control and exhausting to one (1) stack EP K;

(j) One (1) board dryer #1, identified as EP N and constructed in 2000, with a maximum capacity of 47.2 tons gypsum wallboard per hour and a rated burner capacity of 89.0 mmBTU/hr fired with natural gas fuel, exhausting to one (1) stack EP N;

(k) One (1) board dryer #2, identified as EP O and constructed in 2000, with a maximum capacity of 47.2 tons gypsum wallboard per hour and a rated burner capacity of 89.0 mmBTU/hr fired with natural gas fuel, exhausting to one (1) stack EP O;

(l) One (1) mill building, identified as EP P and constructed in 2000, exhausting to one (1) stack EP P and consisting of the following emission units:

(1) Two (2) landplaster storage bins, each having a maximum capacity of 100 tons dried ground gypsum per hour;

(2) Two (2) kettle feed bins, each having a maximum capacity of 50 tons dried ground gypsum per hour;

(3) One (1) landplaster storage bin, having a maximum capacity of 5 tons dried ground gypsum per hour;

(4) One (1) stucco bin, having a maximum capacity of 100 tons stucco per hour;

(5) Two (2) kettle hot pits, each having a maximum capacity of 40 tons stucco per hour.

(m) One (1) manufacturing building, identified as EP Q and constructed in 2000, exhausting to one (1) stack EP Q and consisting of the following emission units:

(1) One (1) stucco day bin, having a maximum capacity of 95 tons per hour;

(2) One (1) landplaster bin, having a maximum capacity of 0.5 tons per hour;

(3) One (1) cerelose bin, having a maximum capacity of 0.16 tons per hour;

(4) One (1) sugar bin, having a maximum capacity of 0.06 tons per hour;

(5) One (1) boric acid bin, having a maximum capacity of 0.3 tons per hour;

(6) One (1) pin mixer, having a maximum capacity of 135 tons additives per hour;

(7) One (1) spare bin, having a maximum capacity of 1 ton dry additives per hour;

(8) One (1) dry additives conveyor, having a maximum capacity of 95 tons per hour;

(9) One (1) additive hopper, having a maximum capacity of 9 tons per hour;

(10) One (1) foaming agent tank, having a maximum capacity of 3.32 gallons per hour;

(11) One (1) inkjet printing system, having a maximum capacity of 0.16 gallons ink per hour;

(12) One (1) end trim, having a maximum capacity of 51.6 tons dry gypsum board per hour;

(13) One (1) dunnage, having a maximum capacity of 4 tons gypsum board per hour.

Minor Permit Revision for an insignificant activity

One (1) 20,000 gallon diesel fuel storage tank and three (3) pump distribution island. The permittee requested on February 28, 2001 that this storage tank be approved as an insignificant activity at this plant. The potential emissions are less than the relevant thresholds specified at 401 KAR 52:020, Section 6 and the requested tank is included in Section C of the permit.

Minor Permit Revision for an insignificant activity

One (1) outside storage area for off-specification wet gypsum wallboard recycled into the gypsum production process. The permittee requested on May 13, 2002 that this storage area be approved as an insignificant activity at this plant. The potential emissions are less than the relevant thresholds specified at 401 KAR 52:020, Section 6 and the requested storage area is included in Section C of the permit.

COMMENTS:

The potential to emit (as defined in 401 KAR 52:001, Section 1 (56)) of PM_{10}, CO, and NO_x is greater than one hundred (100) tons per year. Therefore, the source is a major source and is subject to the provisions of 401 KAR 52:020.

This permit is the renewed issuance of the Title V operating permit for this source. The initial TVOP was issued on September 3, 1999 to Celotex Corporation. The Division was notified on March 10, 2003 of a transfer of ownership from Celotex to BPB Manufacturing, Inc. to whom this renewed permit is issued.

Type of control and efficiency:

The source uses baghouses and bin vent filters to control process particulate emissions. The particulate control efficiency for the control equipment was assumed to be 99%.

Emission factors and their source:

AP-42, Chapter 1.4, Tables 1.4-1, 2 and 3 were used to determine the natural gas combustion emissions from the boilers, heaters and board dryers. Manufacturer's specifications for grain loading and the U.S.EPA Factor Information Retrieval (FIRE) database were used to calculate emissions from the storage bins and silos. Tank emissions were determined using TANKS version 4.0.

Please refer to the detailed emission calculations (Pages 1 through 5).

Existing Approvals:

1. *Title V Permit No. V-99-016, issued on September 3, 1999*:

   This permit was the first air quality approval for this source. The permit specified terms and conditions for the operation of the gypsum wallboard manufacturing source. The following emission unit specific conditions have been revised or further clarified in this Part 70 permit renewal:

   (a) Pursuant to 401 KAR 59:010, particulate matter (PM/PM_{10}) mass emission limits were established for Board Dryer #1 and Board Dryer #2, identified as EP N and EP O, respectively. This notwithstanding, 40 CFR 60, Subpart UUU, which applies to each calciner and dryer at a mineral processing plant, also applies to these two emission units. The Subpart UUU requirements, including the particulate matter emission limits, were not included in *Permit No. V-99-016*. Therefore, the particulate matter (PM/PM_{10}) mass emission limits pursuant to Subpart UUU are included in the renewal permit for Board Dryer #1 and Board Dryer #2. Since the Subpart UUU mass emission limits are more stringent than the 401 KAR 59:010 mass emission limits, the existing 401 KAR 59:010 PM/PM_{10} mass emission limits will not be included in the renewal permit for Board Dryer #1 and Board Dryer #2.

(b) On January 25, 2006 BPB Manufacturing requested that the established permit conditions for EP H (fluid bed stucco cooler) remain in the permit, even though EP H has not been in operation since July of 2001. The permittee has advised this unit may be retired in the future. The Division has acknowledged such and apprised the permittee to notify the Division should such decision be made final. This notwithstanding, conditions established in the initial TVOP for EP H are incorporated into the renewal permit. This includes the applicable requirements of 40 CFR 64, Continuous Assurance Monitoring (CAM), discussed below.

2. *Requests for permit modification submitted on August 29, 2000 and February 4, 2005*:

Plant roads were listed as an insignificant activity in the initial Title V permit, subject only to 401 KAQ 63:010 (Fugitive Emissions). The permittee notified the Kentucky Division for Air Quality on August 29, 2000 of a plan to wet sweep all onsite road surfaces once per week and requested such be inserted into the permit. On February 4, 2005 the permittee notified the Division of their purchase of a new wet scrubbing tractor to clean and maintain the plant haul roads and the concrete apron surrounding the material storage building, and they requested approval that such scrubbing not be conducted during periods of freezing conditions. Section E (1) of the permit requires the permittee to apply all necessary work practice and maintenance procedures to minimize emissions to ensure rule compliance, which can include maintenance procedures and documentation of such to be presented to the Division upon request. While the Division acknowledges the purchase of the new tractor and the stated roadway maintenance practices, no additional sections or changes are made to the permit. The permittee shall continue to conduct such practices in order to comply with the applicable rule cited in Section C and the generally applicable requirements of Section E.

Applicable Regulations:

(a) *401 KAR 59:010, New Process Operations*

Pursuant to 401 KAR 59:010, Section 1, the requirements of this rule apply to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR Chapter 59, commenced on or after July 2, 1975. The requirements of this rule are included in the permit for the following emission units:

1. Fluid Bed Stucco Cooler (EP H);
2. Starch Silo (EP K);
3. Mill Building (EP P); and
4. Manufacturing Building (EP Q).

Mass Emission Limit pursuant to 401 KAR 59:010 Section 3(2): For process rates greater than or equal to 1,000 lbs/hr but less than 60,000 lbs/hr, the allowable emissions of particulate matter shall not exceed : $3.59 \times (\text{Tons Processed})^{0.62}$ lbs/hr. For processing rates of 1000 lbs/hr or less, the allowable emission rate is 2.34 lbs/hr.

The requirements of this rule, as reflected in initial Part 70 No. V-99-016 for Board Dryer Nos. 1 and 2, are not included in this renewal permit since these two emission units are subject to the more stringent requirements of 40 CFR 60, Subpart UUU.

(b) *401 KAR 59:015, New Indirect Heat Exchangers*

Pursuant to 401 KAR 59:015, Section 1, the requirements of this rule apply to each indirect heat exchanger having a heat input capacity of more than one (1) million BTU per hour and that commenced on or after the applicable classification date defined in Section 2 (3) of the rule. The maximum heat input capacity of the dewatering boiler (4.6 mmBTU/hr) is greater than the rule applicability threshold. Therefore, 401 KAR 59:015 is an applicable rule.

(c) *401 KAR 63:010, Fugitive Emissions*

Pursuant to 401 KAR 63:010, Section 1, the requirements of this rule apply to an apparatus, operation, or road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality. Therefore, 401 KAR 63:010 is an applicable rule for onsite roads, wet gypsum storage piles and wet gypsum truck unloading.

(d) *40 CFR 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants*

The requirements of 40 CFR 60, Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants*, apply to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. Therefore, the requirements of this rule are included for the following emission units:

1. Waste gypsum board reclaimer (EP A);
2. FGD drying system #1 (EP B);
3. FGD drying system #2 (EP C);
4. Vermiculite Bin (EP I); and
5. Clay Bin (EP J).

Since FGD drying systems #1 and #2 are crusher/dryer systems, the requirements of this rule apply. No other storage silo at this source stores any nonmetallic mineral, as defined in 40 CFR 60.671. This determination is consistent with that made by the division during initial TV review for this source and equipment.

Regulation *401 KAR 60:670* adopts the requirements of 40 CFR 60, Subpart OOO (40 CFR 60.670 to 60.676) by reference, and establishes alternate compliance standards in lieu of 40 CFR 60.672 for particulate matter. The requirements of this rule are included in this permit for the equipment specified above, as applicable.

(e) *40 CFR 60, Subpart UUU, Standards of Performance for Calciners and Dryers in Mineral Industries*

The requirements of 40 CFR 60, Subpart UUU, *Standards of Performance for Calciners and Dryers in Mineral Industries*, as adopted by reference at *401 KAR 60:005,* apply to each calciner and dryer at a mineral processing plant. Therefore, the requirements of this rule are included for the following emission units:

1. Calcining Kettle #1 (EP E);
2. Calcining Kettle #2 (EP F);
3. Board Dryer #1 (EP N); and
4. Board Dryer #2 (EP O).

The FGD drying systems (EP B and EP C) and the reclaim drying system (EP A) are not subject to the requirements of 40 CFR 60 Subpart UUU as they are combination dryers/crushers. Pursuant to 40 CFR 60.730(b), such equipment is not subject to the provisions of Subpart UUU. This determination is consistent with that made by the Division during initial TV review and permitting for this source and equipment.

(f) *40 CFR 64, Continuous Assurance Monitoring*

The requirements of 40 CFR 64, *Continuous Assurance Monitoring,* apply to emission units which have potential pre-control emission greater than 100 percent of the applicable major Part 70 threshold and use a control device to achieve compliance with an emission limitation or standard. The requirements of this rule are applicable to the Fluid Bed Stucco Cooler (EP H) for particulate emissions, and such requirements are included in the permit for this pollutant specific emissions unit (PSEU).

Non-Applicable Regulations:

(a) The requirements of 40 CFR 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units,* are not included in the permit for the dewatering boiler because the maximum heat input capacity of the boiler (4.6 mmBTU/hr) is less than the rule applicability threshold of 10 mmBTU/hr.

(b) The requirements of 40 CFR 60, Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels,* are not included in the permit for 20,000 gallon diesel fuel storage tank because the tank capacity and vapor pressure of its contents (diesel oil) are below the rule applicability vapor pressure threshold of 15.0 kPa, as specified at 40 CFR 60.110b(b).

(c) The new source standards pursuant to 401 KAR 59:050, *New storage vessels for petroleum liquids,* are not included in the permit for 20,000 gallon diesel fuel storage tank because diesel fuel is not considered as a petroleum liquid, pursuant to 40 KAR 59:050 Section 2 (3).

(d) Pursuant to 401 KAR 59:210, Section 2, the requirements of 401 KAR 59:210, *New fabric, vinyl and paper surface coating operations*, apply to each coating line for fabric, vinyl, or paper. Since the source does not perform any fabric, vinyl or paper coating, the requirements do not apply to the inkjet printing system in the manufacturing building.

(e) Pursuant to 401 KAR 59:212, Section 1, the requirements of 401 KAR 59:212, *New graphic arts facilities using rotogravure and flexography*, are not included in the permit for the inkjet printing system because the system does not use packaging rotogravure, specialty rotogravure or flexographic printing. For the same reason, the requirements of 40 CFR 60, Subpart RR, *Standards of Performance for the Graphic Arts Industry: Publication Rotogravure Printing*, are not applicable to the ink jet printer.

(f) There are no NESHAPs (40 CFR 63 and 401 KAR 63:002) applicable to this existing area source for HAP emissions, as such is defined at 40 CFR 63.2.

SOURCE STATUS

(a) This existing source is a minor stationary source for PSD review because this type of operation is not one of the twenty-eight (28) listed source categories under 401 KAR 51:017 and no attainment pollutant is emitted at a rate of 250 tons per year or more.

(b) Carroll County is designated as attainment for the 8-hour ozone standard and VOC and NO_x, as regulated ozone precursor pollutants, are each emitted at a rate less than 250 tons per year. No other criteria pollutant is emitted at a rate of 250 tons per year or more. Therefore, the existing source is not a major stationary source under prevention of significant deterioration of air quality (PSD), 401 KAR 51:017.

EMISSION AND OPERATING CAPS DESCRIPTION:

The Division has determined that the source does not have the potential to exceed the PSD major source thresholds after enforceable controls and limits. To confirm the manufacturer's estimate for NO_x and CO at the facility, the initial TVOP permit required confirmatory performance testing at the largest sources. Specifically, this included CO testing at one of the two Kettle Calciners and one of the two Board Dryers. The units were respectively tested by the permittee on February 5 and 4, 2004.

PERIODIC MONITORING:

The compliance monitoring requirements are consistent with those made by the Division during initial TV review. Controls are exclusively for PM/PM_{10}, and they consist of small fabric filters for additive bin vents and large baghouses on other process units. Monitoring of the smaller units shall continue to consist of a weekly check and log of pressure drops. The Kettle Calciners are exempted from COMs, but the regulation contained no guidance for periodic monitoring. Therefore, weekly monitoring of the baghouse was established in the initial TV permit and shall continue in this permit renewal. The unit with the highest emission potential was determined in the initial TV permit as the "stucco cooler" (EP H), which is a heat exchanger to transfer heat from the stucco leaving the calciner to the incoming gypsum. Pursuant to the initial TVOP, a particulate matter performance test

was required along with continuous monitoring of the pressure drop at the stucco cooler baghouse. However, since the fluid bed stucco cooler was not in operation since July of 2001, testing was not completed. This notwithstanding, the Division has decided during this renewal that the permittee shall conduct a particulate matter performance test of EP -H within 180 days of startup of the unit, if the unit is returned to operation during the term of this permit.

CREDIBLE EVIDENCE:

This permit contains provisions that require specific test methods, monitoring, or recordkeeping, be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.